

Wildfire Preparedness for Public Water Systems



Effects of Fire on Raw Water Quality

When a wildfire burns vegetation that secures the soil, runoff rates may increase, potentially bringing a surge in sediments and debris to streams and reservoirs that can result in numerous water quality concerns for surface water sources:

- Low dissolved oxygen (DO)
- Aquatic habitat overwhelmed by post-fire sediment and ash
- Increased turbidity, suspended solids, and conductivity
- Increased total organic carbon (TOC)
- Increased ammonia from fire retardants
- Clogged intakes and increased sludge handling
- Elevated phosphorus, iron, manganese, and nitrate levels
- Unpleasant taste and odor
- Changes in pH and alkalinity

For groundwater sources, wildfires could impact groundwater recharge by increasing runoff and reducing the rate at which water on the surface enters the soil.

What can you do to prepare your water system?

- Restrict access to areas surrounding drinking water facilities.
- Secure wellheads, chemicals, pumps, well house.
- Remove debris, trees, or other fire-hazard materials (create a defensible zone) within 6 feet of the ground and 15 feet from any structure.
- Keep intakes clear of sticks, logs, and other debris and trim tree branches overhanging a roof.
- Keep necessary chemicals for water treatment on hand (e.g., chlorine), and be prepared to tweak the dosage within accepted operating parameters.
- Introduce manual/automatic irrigation systems to vulnerable areas (e.g., chlorine storage, control equipment buildings).
- Identify possible alternate water supplies, or maximize finished water storage prior to an anticipated poor water quality event.
- Review historical wildfire data to recognize how the past frequency/severity of wildfires might affect your utility.
- Create a Wildfire Management Plan (details located on the following page).
- Ask your local fire and/or forestry officials about applicable fire codes (local and state). Work with your officials to identify possible hazards to/at your facility.
- Create copies of essential records and store them offsite or in a fireproof safe.
- Record generator connection type, fuel consumption, and capacity load. Develop a backup fueling plan to prioritize which generators to fuel in case of shortage.
- Personnel
 - Encourage staff to develop a personal preparedness plan for themselves and their family.
 - Plan for increased maintenance and operator workload.
 - Make sure proper safety gear is on-hand for field employees.
 - Conduct fire exercises for staff that address impacts to your watershed and facility.
- **If in doubt, do not hesitate to contact your Environmental Program Specialist.**

CREATE A FIRE MANAGEMENT PLAN FOR YOUR WATER SYSTEM

Use the steps outlined below to identify and prioritize hazards, develop and implement an action plan to mitigate fire hazards, and create an annual maintenance schedule to ensure your water system and watershed drainage is as fire safe as you can make it.

1. Talk to your local fire officials and forestry/land management agencies. Ask them for suggestions about state and local fire codes and work to develop partnerships with them.

- Team up to identify hazards at your site.
- Discuss the ways you can help them protect your utility, such as creating fire breaks and maintaining fire roads.
- Pool your resources by setting up or joining a community wildfire protection planning group.
- Engage in exercises simulating fires that impact watersheds and facilities.

2. Create a defensible zone. Consider the effects natural and man-made features have on the spread of fire.

- Ridges can retard the speed at which a fire advances. Canyons and steep slopes can easily double the rate of spread.
- Fire breaks and fire roads create a buffer zone and provide a vantage point for fighting fires.
- This zone of defensible space should range from 50-100 feet for utility equipment and facilities.

3. Identify Vulnerabilities. Think about facility components that can be damaged by wildfire.

- Protect your power. Remote control of system components, such as tanks, may be disabled if fire takes out power to those components.
- Protect your pump and well houses, wellheads, chemicals, and chlorinators.
- Help firefighters protect your assets by using GIS to map remote components. Keep a copy of the map in a secure offsite location.

- Understand the effects fire can have on raw water quality and the water treatment processes.

4. Remove Fuels. Fuels can consist of vegetation, chemicals, and many other materials such as oily rags, trash, cardboard boxes, and wooden pallets.

- Remove tree branches within six feet of the ground.
- Store fuels a safe distance from structures.
- Ask the local power utility to trim tree branches near power lines.
- Thin out continuous tree and brush cover around structures. All flammable vegetation should be removed within 15 feet of a structure.

5. Reduce Structure Ignitability. Fires can take hold quickly. Making structures less ignitable is an important part of a fire management plan.

- Trim tree branches overhanging a roof.
- Keep gutters clear of leaves and debris. Inspect at least twice yearly.
- For new construction, repairs, or remodels, use fire-resistant roofing and building materials.

6. Create a Maintenance Plan

- Identify and schedule seasonal tasks.

7. Conduct Drills for your Staff

- Review your contact lists every six months to ensure accuracy of information.
- Make sure all staff understand where to find information and help during a wildfire emergency.



Card Street Fire. Photo by Jason Sear/KTVA



Funny River Wildfire. Photo by Bill Roth/ADN



Sockeye Wildfire. Photo by Mat-Su Borough spokesperson

Helpful Websites

Alaska Interagency Coordination Center (AICC) Fire Information

http://afsmaps.blm.gov/imf_fire/imf.jsp?site=fire

Active Fire- Public Water Systems in Alaska

<http://www.arcgis.com/home/item.html?id=4ead49c713394eb9a0257557610f59b1>

PWS Security Website

<http://dec.alaska.gov/eh/dw/security/security.html>

(EPA) Incident Action Checklist- Wildfire

<http://water.epa.gov/infrastructure/watersecurity/emergplan/upload/epa817f15010.pdf>

Alaska Wildland Fire Coordinating Group (AWFCG) Brochures and Educational Materials

<http://fire.ak.blm.gov/administration/awfcg.php>

AK Division of Forestry (Incl. Burn Permit Info)

<http://forestry.alaska.gov/>

National Parks Service- Wildland Fire

<http://www.nps.gov/akso/nature/fire/index.cfm>

U.S. Fish and Wildlife- Fire Management in Alaska

<http://www.fws.gov/alaska/nwr/visitor/fire/index.htm>

USDA Forest Service- Fire & Aviation Management

<http://www.fs.fed.us/fire/>

Firewise

<http://firewise.org/?&sso=0>

Department of Transportation (Road Closures)

<http://511.alaska.gov/alaska511/mappingcomponent/index>

National Weather Service

<http://www.weather.gov/>

Alaska Division of Homeland Security and Emergency Management

<http://ready.alaska.gov/>



Department of Environmental Conservation

Drinking Water Program

555 Cordova St. • 1-866-956-7656

<http://www.dec.state.ak.us/eh/dw/index.htm>

Before and During a wildfire, you can monitor conditions @ [Alaska Interagency Coordination Center \(AICC\) Fire Information](#) webmap or view current wildfire extent on the [Active Fire- Public Water Systems in Alaska](#) webmap

During the Fire (unless you have been ordered to evacuate the area)

- Have first-response fire suppression equipment available.
- Communicate with fire response teams and identified customers.
- Notify ADEC if operations and/or water quality or quantity are affected.
- Install equipment in the watershed to prevent damage from debris (sediment traps/debris booms).
- Monitor filters and increase backwashing, as necessary.
- Monitor raw water frequently, and perform jar testing to predict treatment needs.
- Prevent watershed damage from debris by installing permanent or temporary equipment like sediment traps or debris booms.
- If needed, use existing emergency connections or establish temporary connections to neighboring communities.
- Prioritize staff safety and leave the firefighting to the professionals!

After the Fire

- Work with response agencies for obtaining necessary funding, equipment, etc.
- Coordinate with state and/or local partners to restore and treat burned areas.
- Complete damage assessments.
- Review/update your Emergency Response Plan or Priority Measures Plan as utility operations change.
- Conduct further staff training and/or drills.
- Consider implementing future mitigation and/or long-term measures such as:
 - Institute erosion control measures
 - Maintain road system to key areas for fire suppression
 - Remove hazardous fuels
 - Post fire hazard signs with emergency contact information in the watershed
 - Construct detention ponds that allow solids to settle before entering the water plant
 - For future construction projects, use fire resilient building materials

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